

INTEGRATED CIRCUIT DEVICES HAVING BARRIER LAYERS BETWEEN UPPER
ELECTRODES AND DIELECTRIC LAYERS AND METHODS OF
FABRICATING THE SAME

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ABSTRACT OF THE DISCLOSURE

Integrated circuit devices are provided including an integrated circuit substrate and a
capacitor on the integrated circuit substrate. The capacitor includes a lower electrode on the
integrated circuit substrate, a dielectric layer on the lower electrode and an upper electrode on
10 the dielectric layer. A barrier layer is provided between the dielectric layer and the upper
electrode. The barrier layer includes titanium oxide. Related methods of fabricating
integrated circuit devices are also provided.

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